The Environmental Cleanup of Marine Corps Air Facility Tustin

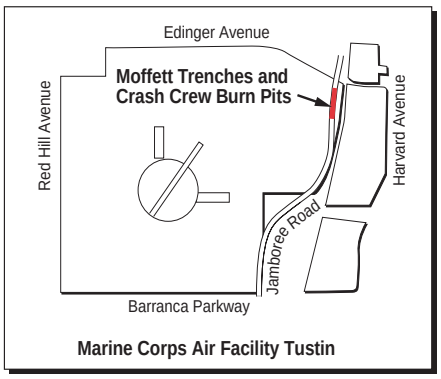
March 1999 Tustin, California

Recent Developments at Moffett Trenches and Crash Crew Burn Pits

The purpose of this informational fact sheet is to provide the public with a brief history and an update of the recent activities associated with Moffett Trenches and Crash Crew Burn Pits at MCAF Tustin. It presents the results of 1) a feasibility study of flood control improvements of Peters Canyon Channel conducted by the U.S. Army Corps of Engineers, 2) recent construction activities conducted by the Transportation Corridor Agency for the expansion of Jamboree Road that now covers the Site, and 3) the on-going groundwater monitoring at the Site. This fact sheet supplements the Proposed Plan issued to the public in October 1996.

An overview of the chronology of events at Moffett Trenches and Crash Crew Burn Pits is shown in the sidebar.

Following the completion of the interim cleanup actions (see section entitled "Interim Cleanup Actions"), a Remedial Investigation (RI) report and a Feasibility Study (FS) were prepared and issued to the public for review and comment in 1996. The RI report prepared by the Marine Corps/Navy detailed the results of the soil and groundwater investigation in this area, originally established as Installation Restoration Program (IRP) Operable Unit (OU) 3, also referenced in this fact sheet as the Site. The report assessed the existing interim cleanup actions (containment system), and human health and ecological risks.



The FS evaluated a range of cleanup alternatives for final management of the chemicals found in the groundwater at the Site. The preferred alternative, in addition to the existing containment system, included 1) documentation of groundwater containment by monitoring groundwater and surface water, 2) inspection and maintenance of the 800-foot Gunite™ (containment) wall in place along Peters Canyon Channel, 3) institutional controls, 4) periodic reviews, and 5) a contingency plan, should migration of groundwater contaminants occur at levels not protective of human health or the environment.

Following the issuance of the FS, a Proposed Plan was written. The Plan described the range of cleanup alternatives evaluated in the FS report, and a public comment period was held from October 18 to November 25, 1996.

Since 1995, quarterly groundwater monitoring has been performed at the Site. The results of the monitoring confirmed that contaminated groundwater remains behind the containment wall. Groundwater contamination is limited to three volatile organic compounds (VOCs), and they are

OPPORTUNITY FOR COMMUNITY INVOLVEMENT

Restoration Advisory Board (RAB) Meeting: Thursday, April 8, 1999

You are encouraged to attend a RAB meeting at the Tustin Senior Center, Multi-Purpose Room, 200 South C Street, Tustin, from 7:00 to 9:00 p.m. to discuss the cleanup of Operable Unit 3 (Moffett Trenches and Crash Crew Burn Pits Site) at MCAF Tustin. Marine Corps/Navy and regulatory agency representatives will be available to discuss results of field investigations, and the cleanup or remedial action selected for the Site. At this meeting you will have an opportunity to ask questions and comment on the information provided in this fact sheet.

CHRONOLOGY OF EVENTS

1950-1971
Moffett Trenches Operation

1971-1983
Crash Crew Burn Pit Operation

1983
Discovery of Jet Fuel in Peters Canyon Channel-10,000 yd^3 of soil removed from Site

1985
Cleanup and Abatement Order

1986
Construction of Gunite™ Containment Wall

1996
OU-3 RI/FS Completed

1997
Draft Record of Decision Completed

1998
U.S. Army Corps of Engineers' Study Completed and Jamboree Road Overpass Constructed

1999
Final Record of Decision to be signed in April

found within the first water-bearing zone (WBZ) at the Site. Two of these compounds were recently reported, at low concentrations, in the second WBZ at the Site.

Subsequent to the 1996 RI, extensive road construction has taken place at the Site. Jamboree Road, which has been elevated and widened where it crosses Edinger Avenue, includes a new northbound off-ramp and southbound on-ramp. As a result of this construction and landscaping, nearly all of the Site is now covered with at least 20 feet of fill material.

In 1998, the U.S. Army Corps of Engineers completed a feasibility study of alternatives for flood control improvement of Peters Canyon Channel in the area of the Site. The results of the study indicate that the east-side of the channel across from the Site can be widened, thereby protecting the Site and affording flood protection needed for the planned reuse of MCAF Tustin.

Background

The Moffett Trenches and Crash Crew Burn Pits were shallow, unlined landfill trenches and pits. The Site, as it looked during operation between 1950 to 1983, is shown on Figure 1. The trenches, containing approximately 5,000 cubic yards of material wastes, were used from approximately 1950 until the early 1970s to dispose of base-generated municipal and industrial wastes, including paints, oils, and solvents. The pits were used to burn liquids during fire-fighting training exercises conducted from about 1971 to 1983. These liquids were primarily jet fuels, as well as oils, solvents, lacquers, and primers. It is estimated, from aerial photographs and historical information, that the area covered by the trenches and pits was approximately 600 by 250 feet. The trenches and pits extended into the shallow groundwater three to eight feet.

In addition to OU-3, other operable units have been established at the base to manage the cleanup of groundwater. A RI report for OU-1 and OU-2 was prepared in November 1997. This report detailed the results of the basewide groundwater investigation, as well as the potential human health and ecological risks. A FS report evaluating potential cleanup alternatives for these operable units will be prepared and made available for public review and comment during the summer of 1999. Additional information on these operable units and other environmental activities at the base will be presented in future fact sheet(s).

Interim Cleanup Actions Taken

In 1983, jet fuel was found seeping into Peters Canyon Channel from the area of the burn pits. To prevent further seepage, the Marine Corps/Navy sandbagged a section of the channel, excavated approximately 10,000 cubic yards of soil from the burn pits, and installed a groundwater extraction well. The soil was hauled to a State of California-approved hazardous waste disposal facility. The area was then covered with clean soil. In 1985, the Santa Ana Regional Water Quality Control Board (SARWQCB) issued a Cleanup and Abatement Order. The Order called for a plan to prevent further discharges to the channel.

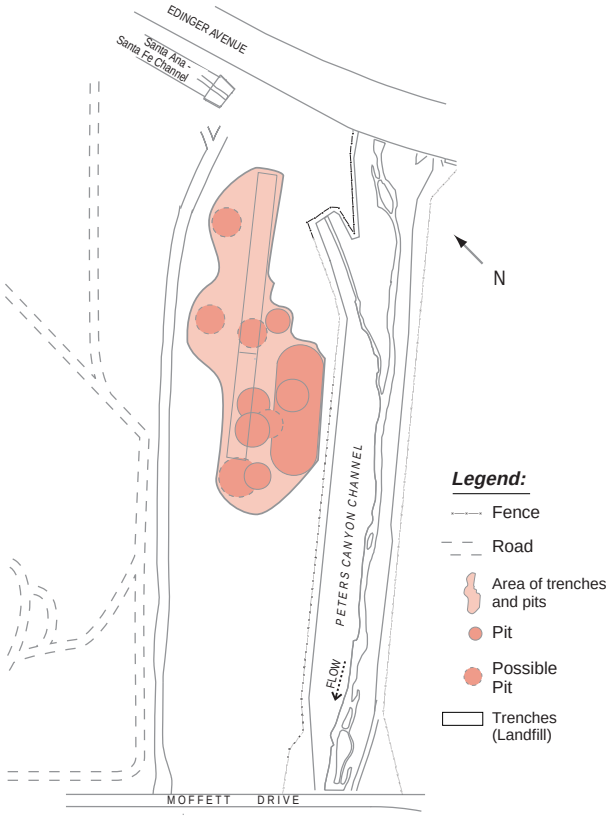


Figure 1 *Site Condition Between 1950 and 1983*

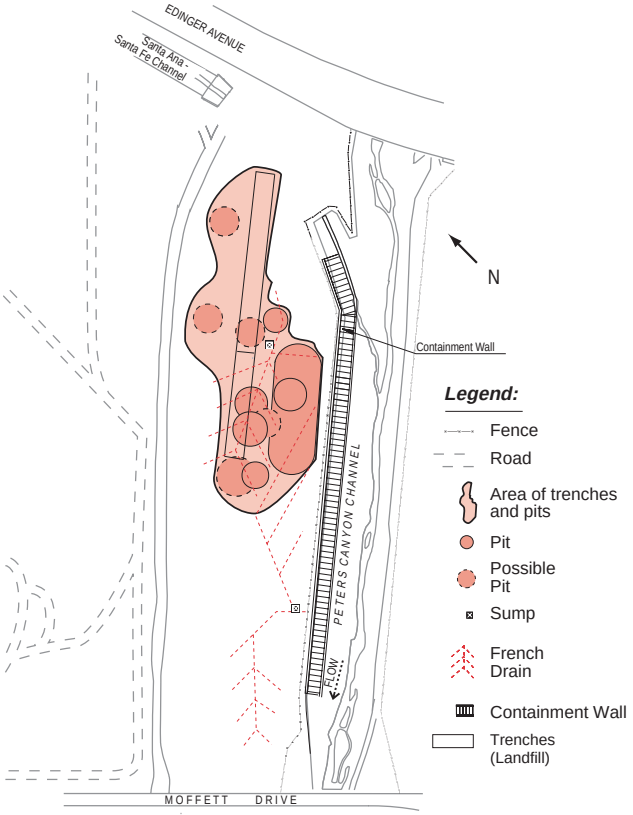


Figure 2 *Interim Cleanup Actions at Moffett Trenches and Crash Crew Burn Pits*

To comply with the Order, an interim cleanup action of a containment wall (cement and synthetic liner) was constructed along the west bank of Peters Canyon Channel to stop the groundwater from seeping into the channel. In addition, a French drain system (designed to collect groundwater flowing through the Site) was constructed in 1987. Figure 2 illustrates the interim cleanup actions installed to keep groundwater from discharging to the channel.

The 1996 RI report determined that the interim cleanup actions, the containment wall and the French drain collection system, were effective in containing groundwater within the Site. The results of the RI report indicated only minimal impacts had occurred to the environment since the original detection of jet fuel in 1983. Because the containment wall was and is preventing groundwater from entering Peters Canyon Channel, the SARWQCB formally rescinded the Cleanup and Abatement Order in May 1996.

Selected Actions To Be Taken

The selected remedial cleanup actions documented in the Draft OU-3 Record of Decision (ROD), are institutional controls, groundwater and surface water monitoring, inspection and maintenance of the containment wall, maintenance of the French drain system and associated sumps, maintenance of six monitoring wells, and periodic reviews to measure the success of these cleanup actions. More information about the selected remedial actions is contained in the Feasibility Study for Operable Unit 3, MCAS Tustin, California, dated July 1996.

Of particular significance are the institutional controls to be established at the Site. Institutional controls are non-engineered mechanisms to limit human exposure to buried waste, contaminated subsurface soil, or contaminated groundwater. The selected institutional controls identified for the Site fall into two broad categories: 1) restrictions on future land use and 2) provisions to access the Site for monitoring and maintenance of the remedial action components. Institutional controls to be implemented at the Site include:

Land Use Restrictions

- Future landowner(s)/user(s) would be restricted from using the property for residential purposes (the new Jamboree Road also excludes this type of future use).
- Future landowner(s)/user(s) would be restricted from any activities that would adversely impact remedial action components (monitoring wells, French drain system, and containment wall).
- Future landowner(s)/user(s) would be restricted from any construction that would interfere with and negatively affect the remedy, or restrict access for operation and maintenance of the remedy components.
- Permanent markers or signs would be used as a mechanism to provide an on-site description of what activities could and could not be done at the Site, and advise the public of the presence of the landfill.

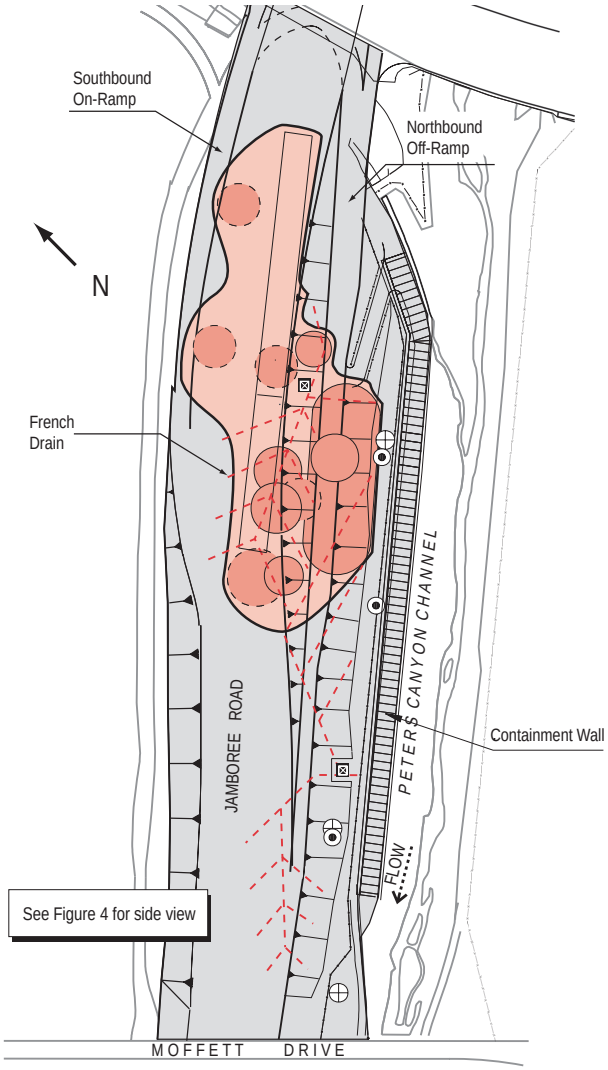


Figure 3 *Area Requiring Institutional Controls*

Legend:

- Fence
- Area of trenches and pits
- Pit
- Possible Pit
- Monitoring Wells (Shallow)
- Monitoring Wells (Deep)
- Trenches (Landfill)
- Containment Wall
- Sump
- French Drain
- Sloped Surface
- Area of Institutional Control

Site Access

- The Marine Corps/Navy would ensure long-term access to the monitoring wells, French drain, and the containment wall for the purposes of conducting monitoring and maintenance on these structures.

The area requiring institutional controls is shown on Figure 3.

Recent Flood Control Channel Improvement Study

The current carrying capacity of the Peters Canyon Channel near the Site is inadequate to convey the 100-year flood discharge of 19,400 cubic feet of water per second. The City of Tustin Local Redevelopment Agency prepared a reuse plan for MCAF Tustin, which recognized the need for improvements of the channel as a primary flood control channel. To support the reuse plan, the Marine Corps/Navy funded a U.S. Army Corps of Engineers feasibility study in 1998 to assess alternative flood control channel improvements for the portion of the channel between the bridge crossings of Moffett Drive and Edinger Avenue. The study was completed in December 1998. The study identified a flood control improvement alternative that would not require removal of the containment wall and would meet flood control and reuse objectives. The alternative would require widening of the Channel on the east side only, and is shown on Figure 4.

Initially, seven designs, including widening the west or east sides of the channel, widening both sides, constructing an overflow channel, or extending the Santa Ana-Santa Fe Storm Drain to parallel Peters Canyon Channel, were considered. In addition, ten sectional design alternatives including trapezoidal concrete banks with an earth bed, rectangular concrete banks, rock banks with an earth bed, or a rectangular concrete box culvert, were also assessed. These design alternatives were screened using the following six study objectives:

- Achieve the level of a 100-year flood protection under the ultimate design conditions,
- Provide compatibility with Orange County's overall channel improvement design,
- Ensure compliance with the City of Tustin's redevelopment plan,
- Achieve minimized construction and mitigation costs,
- Ensure compliance with the federal cleanup law known as CERCLA, and proposed remediation measures for the landfill site, and
- Ensure compliance with regulatory permitting requirements.

Four of the seven design alternatives were further evaluated to determine 1) preliminary design dimensions, 2) horizontal and vertical alignments, 3) rights-of-way requirements, 4) costs, 5) impacts on adjacent properties and the channel environments, and 6) effects on the proposed reuse plan. Based on the results of this evaluation, the U.S. Army Corps of Engineers recommended widening the east side of the channel, opposite the Site. Implementation of this alternative would result in the least costs, require minimal additional rights-of-way, avoid impacts on the existing cleanup actions and future Jamboree Road improvements, meet the proposed multi-use objective of the channel, meet the City of Tustin's reuse plan objectives, and result in the enhancement of the natural environment within the channel. The estimated cost to construct this alternative is approximately $1,200,000.

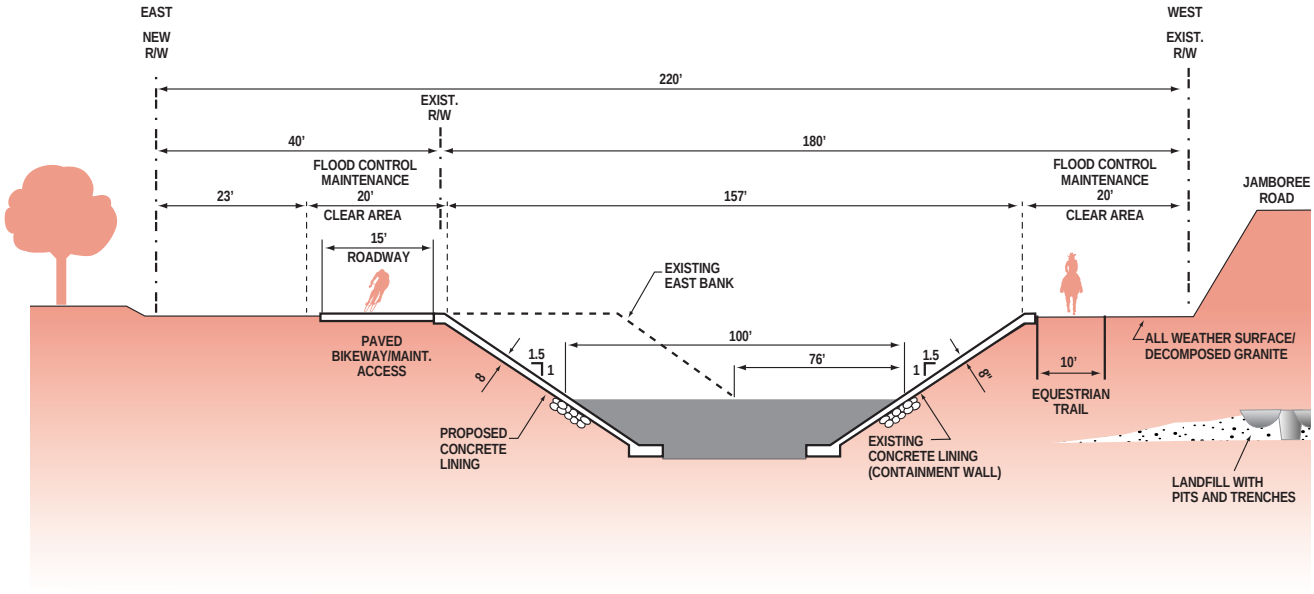


Figure 4 *Peters Canyon Channel East Side Widening Alternative (Looking Downstream)*

Jamboree Road Improvement Project

During 1989-90, construction began on an extension of Jamboree Road along the eastern boundary of MCAF Tustin. The extension project resulted in an elevated road and covered portions of the Site, including the trenches, burn pits, and the French drain system. Since late 1997, additional road construction has taken place at the Site. Nearly all of the installed interim cleanup actions are now covered by Jamboree Road, and its associated ramps and embankments. The recent construction, under the direction of the Transportation Corridor Agency (TCA), has maintained the integrity of the landfill and effectively forms a cap over the Site and includes:

- Placement of a 40 mil thick, high-density polyethylene (HDPE) liner and subdrain (water collection) system over the landfill on the east side of Jamboree Road, beneath the northbound off-ramp, embankment, and retaining walls,
- Placement of up to approximately 20 feet of soil material over the landfill area,
- Construction of new off- and on-ramps on each side of Jamboree Road,
- Installation of surface water runoff collection channels and drains,
- Construction of a retaining wall around the south sump of the French drain system, and
- Elevating the north sump and the two groundwater monitoring wells to the new ground surface.

The newly constructed Jamboree Road features are shown on Figure 5.

There are three beneficial aspects of the new road which was constructed to improve the traffic flow on Edinger Avenue and Jamboree Road. First, the additional fill material and surface improvements further reduce the likelihood of direct contact with any landfill materials, contaminated soil, or groundwater. Second, the new roadway and ramps also minimize the likelihood of future construction, earth-moving, or drilling activities exposing landfill materials and groundwater. Third, surface water infiltration is precluded by the presence of the HDPE (plastic) liner and the road surfaces.

The Site, as it exists today with its interim cleanup measures and the overlying Jamboree Road, is shown on Figure 6.

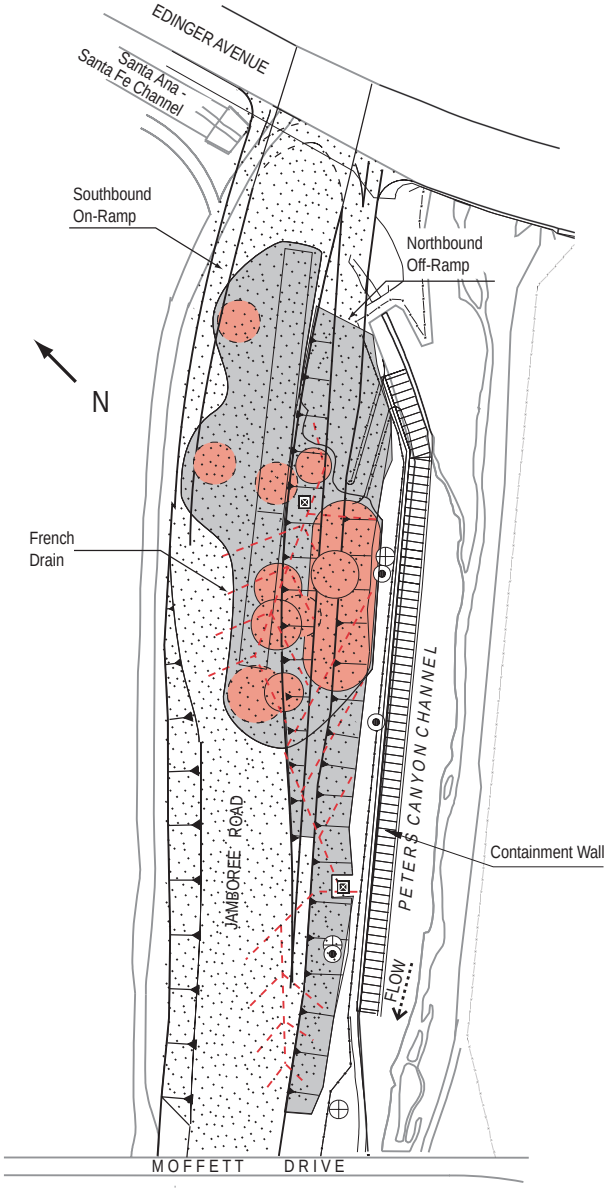


Figure 5 *Newly Constructed Jamboree Road Features*

Legend:

- Fence
- Area of trenches and pits
- Pit
- Possible Pit
- Monitoring Wells (Shallow)
- Monitoring Wells (Deep)
- Trenches (Landfill)
- Containment Wall
- Sump
- French Drain
- Sloped Surface
- Area Covered by Jamboree Road, Exit Ramps, and Slopes
- Area Covered by Plastic Liner

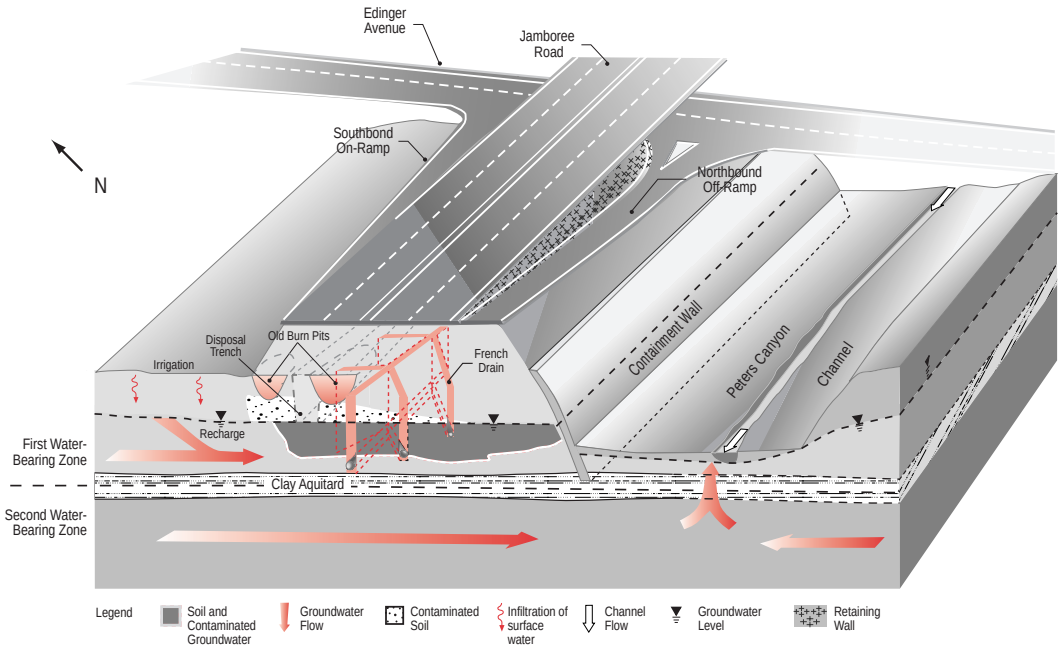


Figure 6 *Schematic of Moffet Trenches and Crash Crew Burn Pits as it Exists Today*

Results of Groundwater Monitoring

Since 1995, quarterly groundwater sampling has occurred at the Site. The monitoring wells shown on Figure 3 have been sampled for ten quarters with the most recent sampling occurring in December 1998. The primary chemicals reported in the groundwater were VOCs, 1, 1-dichloroethane (1, 1-DCA), 1,1-dichloroethene (1,1-DCE), and trichloroethene (TCE). The results to-date from the sampling indicate that the three VOCs are generally contained within the first water-bearing zone (WBZ) behind the containment wall, and at low concentrations ranging from non-detect (ND) to 130 micrograms/liters (µg/L). In July and September 1998, however, 1, 1-DCA and 1,1-DCE were reported in the second WBZ. The concentration levels ranged from ND to 1.9 µg/L, which is below the federal drinking water standards for the chemicals. The presence of the VOCs in the second WBZ, which is not used as a drinking water source, is believed to result from the effects of the heavy precipitation during the winter of 1997 to 1998, and effects of the Jamboree Road construction. The effects of the new road construction include 1) decreased evaporation of groundwater from the first WBZ due primarily to the installation of a plastic liner and road expansion, and 2) the compaction of soils from the increased weight of the overlying fill material which tends to "squeeze" water from the formation materials.

As part of the remedial actions at the Site, groundwater monitoring will continue to document that the groundwater has not migrated from the landfill, and remains behind the containment wall. The need for long-term monitoring will be based on the results of a five-year assessment of the conditions at the Site. Should groundwater migrate off-Site, the contingency plan would be implemented.

An Administrative Record file is the collection of all reports and documents used by the Marine Corps/Navy in the selection of a preferred cleanup alternative(s). This collection provides a record of all decisions and actions taken by the Marine Corps/Navy. Such a collection has been compiled for Operable Unit (OU) 3 and includes the OU-3 Remedial Investigation and Feasibility Study reports, Draft OU-3 Record of Decision (ROD), U.S. Army Corps of Engineers' report entitled "Flood Control Improvement Study Peters Canyon Channel MCAS Tustin, California," and the 1997 Annual Groundwater Monitoring Report. The collection is available for public review. The relevant documents from the Moffett Trenches and Crash Crew Burn Pits area and a complete index of all MCAF Tustin Administrative Record files are housed in the Information Repository at:

University of California, Irvine
Main Library
Government Publications Department

Call (714) 824-7362 or 824-6836 for current hours and directions.

The complete collection of documents listed in the index is available for review at:

Southwest Division Naval Facilities
Engineering Command
1220 Pacific Highway
San Diego, California 92132-5187

To arrange a time to review documents, contact Ms. Diane Silva at (619) 532-3676.

Multi-Agency Environmental Team Concurs with Remedial Actions

With fast-track cleanup activities under way and the operational closure of MCAF Tustin in 1999, the Department of Defense formed a team in 1993, comprised of the State of California Environmental Protection Agency and the U.S. Environmental Protection Agency, to coordinate the MCAF Tustin Installation Restoration Program.

The primary goals of the BRAC Cleanup Team (BCT) are to support the protection of human health and the environment, and to expedite the closure and reuse of the base. The BCT also serves as the primary forum for assessing cleanup priorities and progress, and obtaining consensus on issues regarding the base's environmental cleanup activities.

The BCT completed its review of the Operable Unit 3 (Moffett Trenches and Crash Crew Burn Pits) Remedial Investigation and Feasibility Study reports. Discussions were held regarding all the alternatives evaluated in the Feasibility Study, and the team concurred with the Marine Corps/Navy recommended alternative. Additionally, the team was provided the Draft OU-3 Record of Decision, the U.S. Army Corps of Engineers' Flood Control Improvement Study for Peters Canyon Channel, and tracked the progress of the Jamboree Road construction over OU-3. The Final OU-3 Record of Decision will be issued in the spring of 1999 for signature by the Marine Corps and Cal-EPA Department of Toxic Substances Control (DTSC) and Santa Ana Regional Water Quality Control Board (SARWQCB). The Final OU-3 Record of Decision will include the results of the U.S. Army Corps of Engineers' Flood Control Improvement Study, responses to BCT comments on the RI/FS, results of the groundwater monitoring at the Site, and a description of the recent construction of Jamboree Road improvements .

The community-based Restoration Advisory Board (RAB), established in 1994, regularly meets to discuss and ask questions about environmental investigation and cleanup activities on the base. The RAB reviewed the OU-3 reports and the Proposed Plan and provided its comments to the Marine Corps/Navy for evaluation.

What's Next in the Cleanup Process

The diagram below gives the status of OU-3 within the MCAF Tustin Installation Restoration Program. The next major step will be the signing of the OU-3 Record of Decision by the Marine Corps and Cal-EPA which is scheduled for April 1999.

MCAS Tustin Installation Restoration Program Process — Operable Unit 3

Interim Action	Remedial Investigation (RI)	Feasibility Study (FS)	Public Comment Period	Record of Decision (ROD)	Remedial Design	Remedial Action
COMPLETED				MOFFETT TRENCHES AND CRASH CREW BURN PITS – OPERABLE UNIT 3		
A cleanup and abatement order is issued in May 1985, resulting in excavation of the burn pits. Interim cleanup activities included constructing a containment wall and installing a French drain system.	The RI identified sources and areas of contamination. RI results confirm that interim action activities are still effective. The cleanup and abatement order is rescinded in May 1996.	The FS identified cleanup options and alternatives for the contamination problems.	The public reviewed and commented on the alternatives, including MCAF Tustin's preferred alternative. Comments were considered and responded to in writing.	The ROD will document the selected cleanup alternative, flood control improvements, and recent Jamboree Road construction.	Detailed specifications for the selected remedy will be developed.	The selected cleanup remedy will be implemented.

For Additional Information

The Marine Corps/Navy encourages community involvement in the cleanup decision-making process, an integral part of the environmental restoration program at MCAF Tustin. If you have any questions about environmental activities at the Facility, or would like to be added to the mailing list, please feel free to contact any of the following project representatives:

Mr. Jose Payne
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Office of Hazardous Waste
MCAF Tustin
HQ BRAC, Bldg. 4, Code2AS
P.O.Box 95002
Santa Ana,CA 92709-5002
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Santa Ana, CA 92709-5001
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Mr. Andrew Bain
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San Francisco, CA 94105
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Public Part. Specialist
Cal-EPA
Dept. of Toxic Substance Control
5796 Corporate Ave.
Cypress, CA 90630
(714) 484-5416

MAILING LIST COUPON

If you would like to be on the mailing list to receive information about environmental restoration activities at MCAF Tustin, please complete the coupon below and mail to: Officer In Charge, BRAC Environmental Coordinator MCAF Tustin, Attn: HQ BRAC, Bldg. 4, Code 2AS, P.O. Box 95002, Santa Ana, CA 92709-5002.

❒ Add me to the MCAF Tustin Installation Restoration Program mailing list.

❒ Send me information on Restoration Advisory Board membership.

Name _____

Street _____

City _____ State _____ Zip Code _____

Affiliation (optional) _____ Telephone ( ) _____

Jose Payne
Base Realignment and Closure Coordinator
MCAF Tustin
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P.O. Box 95002
Santa Ana, CA 92709-5002

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